CLAIMS

1. A method of determining a geographic position of a remote unit in a wireless communication system, comprising:

determining a first position solution of the remote unit using a first set of position data;

determining a second position solution of the remote unit using a second set of position data;

selecting between the first position solution and the second position solution based on a predetermined selection criteria.

2. The method of claim 1 wherein the first set of position data include network-based measurements.

3. The method of claim 2 wherein the network-based measurements include pilot phase measurements.

4. The method of claim 2 wherein the network-based measurements include a round trip delay measurement.

5. The method of claim 2 wherein the network-based measurements include an angle of arrival measurement.

6. The method of claim 2 wherein the network-based measurements include a time of arrival measurement.

7. The method of claim 2 include a time difference of arrival measurement.

8. The method of claim 1 wherein the second set of data include non-network-based measurements.

9. The method of claim 8 wherein the non-network-based measurements include satellite based measurements.

10. The method of claim 8 wherein the non-network-based measurements include global positioning system measurements.

11. The method of claim 8 wherein the non-network-based measurements include geometric dilution of precision measurements.

12. The method of claim 8 wherein the non-network-based measurements include position dilution of precision measurements.

13. The method of claim 8 wherein the non-network-based measurements include horizontal dilution of precision measurements.

14. The method of claim 8 wherein the non-network-based measurements include weighted dilution of precision measurements.

15. The method of claim 8 wherein the non-network-based measurements include solution unit fault measurements.

16. The method of claim 8 wherein the non-network-based measurements include residual magnitudes measurements.

17. The method of claim 1 wherein selecting between the first position solution and the second position solution includes comparing respective figures of merit for the two position solutions.

18. The method of claim 1 wherein comparing includes evaluating the relative horizontal estimate of position error.

19. The method of claim 18 wherein comparing includes evaluating the relative geometric dilution of precision error.

20. The method of claim 18 wherein comparing includes evaluating the relative position of dilution of precision error.

21. The method of claim 18 wherein comparing includes evaluating the relative horizontal dilution of precision error.

22. The method of claim 18 wherein comparing includes evaluating the relative weighted dilution of precision errors.

23. The method of claim 18 wherein comparing includes evaluating the relative unit fault of the solution errors.

24. The method of claim 18 wherein comparing includes evaluating the relative measurement residual magnitudes.

25. The method of claim 9 wherein comparing is biased in favor of one of the position solutions.

26. The method of 25 wherein comparing is biased in favor of one of the position solutions unless an error metric of the other position is less than a threshold value wherein the other position solution is selected.

27. The method of claim 26 wherein the favored position solution is a global positioning system solution.

28. The method of claim 1 wherein the remote unit is a mobile station.

29. A method of determining a geographic position of a remote unit in a wireless communication system, comprising:

determining a pre-fix position solution of the remote unit for each of at least two types of position measurement solutions;

selecting a desired one of the pre-fix position solutions based on figures of merit of the respective position solutions;

determining a final-fix position solution of the remote unit using at least one type of position measurement solution and the selected pre-fix position solution; and

selecting a desired final position solution as the geographic position of the remote unit based on respective figures of merit of the desired pre-fix position solution and the final-fix position solution.

30. The method of claim 29 wherein determining the pre-fix position solution includes using mixed cell sector position data.

31. The method of claim 29 wherein determining the pre-fix position solution uses advanced forward link trilateration.

32. The method of claim 29 wherein selecting a desired pre-fix position solution includes evaluating a horizontal estimated position error of the solutions.

33. The method of claim 29 wherein selecting a desired pre-fix position solution includes determining a weighted average of initial solution.

34. The method of claim 29 wherein selecting a desired pre-fix position solution includes determining a receiver autonomous integrity monitoring quality metric.

35. The method of claim 29 wherein selecting a desired pre-fix position solution includes evaluating the relative geometric dilution of precision error of the solutions.

36. The method of claim 29 wherein selecting a desired pre-fix position solution includes evaluating the relative position dilution of precision error of the solutions.

37. The method of claim 29 wherein selecting a desired pre-fix position solution includes evaluating the relative horizontal dilution of precision error of the solutions.

38. The method of claim 29 wherein selecting a desired pre-fix position solution includes evaluating the relative weighted dilution of precision error of the solutions.

39. The method of claim 29 wherein selecting a desired pre-fix position solution includes evaluating the relative unit fault of the solutions.

40. The method of claim 29 wherein selecting a desired pre-fix position solution includes evaluating the relative residual magnitudes of the solutions.

41. The method of claim 29 wherein determining the final-fix position solution includes using measurements of signals of the communication system itself.

42. The method of claim 41 wherein determining the final-fix position solution includes using advanced forward link trilateration position data.

43. The method of claim 41 wherein determining the final-fix position solution includes using mixed cell sector position data.

44. The method of claim 41 wherein determining the final-fix position solution includes using round-trip-delay position data.

45. The method of claim 29 wherein determining the final-fix position solution includes using non-network-based measurement systems.

46. The method of claim 45 wherein the non-network-based measurement system includes a satellite measurement system.

47. The method of claim 46 wherein the satellite measurement system includes a global positioning system.

48. The method of claim 46 wherein the satellite measurement system includes a GLONASS system.

49. The method of claim 46 wherein the satellite measurement system includes a Galileo system.

50. The method of claim 29 wherein selecting a desired final-fix position solution includes evaluating a horizontal estimated position error of the solutions.

51. The method of claim 29 wherein selecting a desired final-fix position solution includes evaluating the geometric dilution of precision error of the solutions.

52. The method of claim 29 wherein selecting a desired final-fix position solution includes evaluating the relative position dilution of precision error of the solutions.

53. The method of claim 29 wherein selecting a desired final-fix position solution includes evaluating the relative horizontal dilution of precision error of the solutions.

54. The method of claim 29 wherein selecting a desired final-fix position solution includes evaluating the relative unit fault of the solutions.

55. The method of claim 29 wherein selecting a desired final-fix position solution includes evaluating the relative residual magnitudes of the solutions.

56. The method of claim 29 wherein selecting a desired final-fix position solution includes determining a weighted average of final-fix position solutions.

57. The method of claim 29 wherein selecting a desired final-fix position solution includes determining a receiver autonomous integrity monitoring metric.

58. The method of claim 29 wherein the remote unit is a mobile station.

59. A method of determining a geographic position of a remote unit in a wireless communication system, comprising:

determining a first position solution based on mixed cell network measurements;

determining a second position solution based on pilot phase measurements;

selecting a pre-fix position solution from between the first position solution and the second position solution; and

generating acquisition assistance data based on the selected pre-fix position solution;

60. The method of claim 59 further comprising:

receiving global positioning system signals using the acquisition assistance data;

determining a third position solution using network-based measurements;

determining a fourth position solution using global positioning system measurements processed with the acquisition assistance data; and

selecting between the third position solution and the fourth position solution as the geographic position of the remote unit in accordance with a predetermined selection criteria.

61. The method of claim 60 wherein selecting between the third position solution and the fourth position solution includes comparing respective figures of merit for the two solutions.

62. The method of claim 61 wherein comparing includes evaluating the respective horizontal estimate of position error of the two solutions.

63. The method of claim 61 wherein comparing is biased in favor of one of the position solutions.

64. The method of claim 61 wherein comparing is biased in favor of the position solution using global positioning system measurements.

65. The method of claim 59 wherein selecting between the first position solution and the second position solution includes comparing respective figures of merit of the two solutions.

66. The method of claim 65 wherein comparing includes evaluating the respective horizontal estimate of position error of the two solutions.

67. The method of claim 65 wherein comparing includes evaluating the respective geometric dilution of precision of the two solutions.

68. The method of claim 65 wherein comparing includes evaluating the respective position dilution of precision error of the two solutions.

69. The method of claim 65 wherein comparing includes evaluating the respective horizontal dilution of precision error of the two solutions.

70. The method of claim 65 wherein comparing includes evaluating the respective unit fault of the two solutions.

71. The method of claim 65 wherein comparing includes evaluating the respective magnitude of the two solutions.

72. The method of claim 65 wherein the remote unit is a mobile station.

73. A position determination device in a wireless communication system, comprising:

a position engine to receive data produced from network signals and non-network signals and to process the data to determine at least two position solutions; and

a controller to select a desired position solution based on respective figures of merit of the position solutions.

74. The device of claim 73 wherein the controller further includes the position engine.

75. The device of claim 73 wherein the controller further includes generating acquisition assistance data based on a position solution processed using network-based data wherein the acquisition assistance data is used by a remote unit in processing non-network-based signals.

76. The device of claim 73 wherein the acquisition assistance data is generated using an advanced forward link trilateration covariance matrix.

77. The device of claim 75 wherein the acquisition assistance data is generated using cell sector data.

78. The device of claim 75 wherein the acquisition assistance data is generated using roundtrip delay data.

79. The device of claim 75 wherein the acquisition assistance data is generated using angle of arrival data.

80. The device of claim 75 wherein the acquisition assistance data is generated using time of arrival data.

81. The device of claim 75 further including generating two sets of acquisition assistance data.

82. The device of claim 81 wherein a first of the two sets of acquisition data is generated using an advance forward link trilateration covariance matrix and a second of the two sets of acquisition data is generated using additional network-based data.

83. The device of claim 82 wherein the two sets of acquisition assistance data are combined to generate a final set of acquisition assistance data.

84. The device of claim 83 wherein the combination is selected as an intersection of an acquisition assistance data phase window for a global positioning system satellite signal.

85. The device of claim 83 wherein the combination is selected as an intersection of an acquisition assistance data Doppler window for a global positioning system satellite signal.

86. The device of claim 83 wherein the combination is selected as an intersection of an acquisition assistance data phase window and a Doppler window for a global positioning system satellite signal.

87. The device of claim 83 wherein the combination is selected as an average of an acquisition assistance data phase window for a global positioning system satellite signal.

88. The device of claim 83 wherein the combinations selected as an average of an acquisition assistance data Doppler window for a global positioning system satellite signal.

89. The device of claim 83 wherein the combination is selected as an average of an acquisition assistance data phase window and a Doppler window for a global positioning system satellite signal.

90. The device of claim 75 wherein the acquisition assistance data assist the remote unit in processing global positioning system signals.

91. The device of claim 73 wherein the data from non-network-based signals include signals from a global positioning system.

92. The device of claim 73 wherein the data from network signals include pilot phase measurements.

93. The device of claim 73 wherein the position determination device is included in a base station.

94. The device of claim 67 wherein the position determination device is included in a wireless network infrastructure.

95. The device of claim 73 wherein the position determination device is included in a remote unit.

96. A position determination device in a wireless communication system, comprising:

a position engine to process data from a remote unit and to determine a pre-fix position solution and a final-fix position solution; and

a controller to select a desired final solution as the geographic position of the remote unit based on respective estimated errors of the position solutions.

97. The device of claim 96 wherein determining the pre-fix position solution includes processing data of network-based measurements.

98. The device of claim 96 wherein determining a final-fix position solution includes processing data of non-network-based measurements.

99. The device of claim 96 wherein selecting a desired final position includes evaluation of respective estimated errors of the solutions.

100. A remote unit for use in a wireless communication system, comprising:

a controller to collect a first set of measurement data on signals receiver by the remote unit;

a position engine to accept the first set of data and to determine a first position solution of the remote unit,

wherein using knowledge of the first position solution the controller collects a second set of measurement data on signals received by the remote unit and the position engine accepts the second set of data and determines a second position solution of the remote unit, and the controller selects between the first and second position solutions based on a predetermined selection criteria.

101. A remote unit for use in a wireless communication system, comprising:

a controller to collect a first set of measurement data on signals receiver by the remote unit;

a position engine to accept the first set of data and to determine a first position solution of the remote unit,

wherein the controller collects a second set of measurement data on signals received by the remote unit and the position engine accepts the second set of data and determines a second position solution of the remote unit, and the controller selects between the first and second position solutions based on a predetermined selection criteria.